Foreward

How Forecasts Are Made

Most of the annual streamflow in the Western United States originates as snowfall. This snowfall accumulates high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are viewed in conjunction with snowpack data to prepare runoff forecasts. This report presents a comprehensive picture of water supply outlook conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data and narratives describing current conditions.

Streamflow forecasts are cooperatively generated by Soil Conservation Service and National Weather Service hydrologists. Forecasts become more accurate as more data affecting runoff becomes known. For this reason, forecasts are issued that reflect three future precipitation conditions — Below Normal, Average, and Above Normal. These forecasts are termed reasonable minimum, most probable, and reasonable maximum. Actual streamflow can be expected to fall between the lower and upper forecast values eight out of ten years.

Snowpack data are obtained by using a combination of manual and automated measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation, temperature, and other parameters are monitored on a daily basis and transmitted via radio telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.

For More Information

Copies of Monthly Water Supply Outlook Reports and other reports may be obtained from the states listed below. Because of the limited space, snow survey measurements are not published in monthly reports. An annual snow survey data summary is published by the Soil Conservation Service for each of the western states. Historical snow survey data may be obtained at those same offices.

STATE	ADDRESS
Alaska	201 East 9th Ave., Suite 300, Anchorage, AK 99501-3887
Arizona	201 East Indianola, Suite 200, Phoenix, AZ 85012
Colorado (New Mexico)	2490 West 28th Ave., Denver, CO 80211
Idaho	304 North 8th Street, Room 345, Boise, ID 83702
Montana	10 East Babcock, Room 443, Federal Building, Bozeman, MT 59715
Nevada	50 South Virginia Street, Third Floor, Reno, NV 89505
Oregon	1220 Southwest 3rd Ave., 16th Floor, Portland, OR 97204
Utah	4402 Federal Building, 125 South State Street, Salt Lake City, UT 84147
Washington	360 U.S. Court House, Spokane, WA 99201
Wyoming	Federal Building, 100 East "B" Street, Casper, WY 82602

In addition to state reports, a Water Supply Outlook for the Western United States is published by the Soil Conservation Service and National Weather Service monthly, January through May. Reports may be obtained from the Soil Conservation Service, West National Technical Center, 511 Northwest Broadway, Room 547, Portland, OR 97209.

Published by other agencies:

Water Supply Outlook Reports prepared by other agencies include: California — Snow Survey Branch, California Department of Water Resources, P.O. Box 388, Sacramento, CA 98502; British Columbia — The Ministry of Environment, Water Investigations Branch, Parliament Buildings, Victoria, British Columbia, V8V 1X5; Yukon Territory — Department of Indian and Northern Affairs, Northern Operations Branch, 200 Range Road, Whitehorse, Yukon Territory, Y1A 3V1; Alberta, Saskatchewan, and N.W.T. — The Water Survey of Canada, Inland Waters Branch, 110-12 Avenue S.W., Calgary, Alberta, T3C 1A6.

Oregon Water Supply Outlook

and

Federal – State – Private Cooperative Snow Surveys

Issued by

Wilson Scaling
Chief
Soil Conservation Service
Washington, D.C.

Released by

Jack P. Kanaiz
State Conservationist
Soil Conservation Service
Portland, Oregon

Prepared by

Stanley R. Fox
Snow Survey Supervisor
Soil Conservation Service
1220 SW 3rd Ave., 16th Fl.
Portland, Oregon 97204

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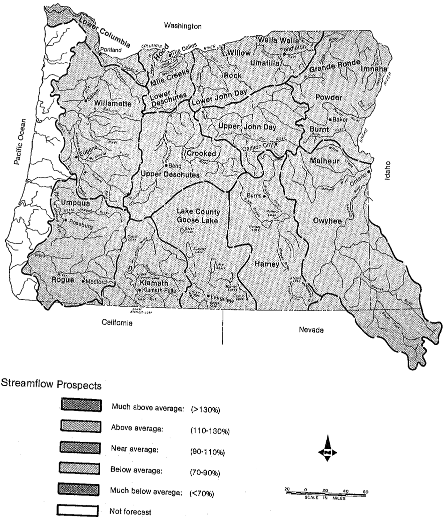
Streamflow Prospects for Oregon

Spring and Summer Period



GENERAL OUTLOOK

SUMMARY:

Streamflow is forecast to be near normal throughout Oregon this spring and summer. The mountain snowpack is near to above average. Winter precipitation is below average. Reservoir storage is 113% of the January 1 normal.

SNOWPACK:

The mountain snowpack is near normal in the Cascades. It increases to above normal in eastern Oregon. Harney and Malheur Counties have a much above normal snowpack again this year. The much below normal temperatures during November and part of December caused the mountain precipitation to fall mainly as snow. These temperatures then prevented the snow from melting. This is the reason for the heavy snowpack considering the below normal precipitation.

PRECIPITATION:

Precipitation during December was very low. The two best areas in the state were Malheur County (70% of normal) and the Deschutes/Crooked drainage basins (78% of normal). Harney County was 53% of normal. The rest of the state was below 40% of normal. Precipitation for the water year to date ranges from 58 to 84 percent. The heavier amounts were in south eastern Oregon. The southern Cascades had the lowest amounts (below 60%) while the rest of the state had about 75% of normal amounts.

RESERVOIRS:

Twenty-seven principle irrigation reservoirs currently contain 1,846,100 acre feet of storage. This is 113% of the January 1 average and 56% of capacity.

STREAMFLOW:

Streamflow has been near normal east of the Cascades. West of the Cascades it has been below normal. Prospective streamflow as a percent of average on representative Oregon streams is as follows:

STREAM	PERIOD	% OF AVERAGE
OWYHEE NET INFLOW	FEB-JUL	109%
GRANDE RONDE AT LAGRANDE	MAR-SEP	89%
UMATILLA AT PENDLETON	MAR-SEP	100%
DESCHUTES AT BENHAM FALLS	APR-SEP	97%
WILLAMETTE MF NR OAKRIDGE	APR-SEP	105%
ROGUE AT RAYGOLD	APR-SEP	100%
UPP. KLAMATH LK NET INFLOW	APR-SEP	96%
SILVIES NEAR BURNS	MAR-JUL	100%

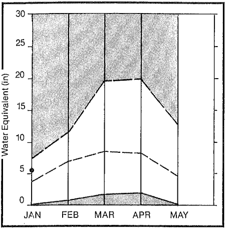
Malheur Lake in Harney County is expected to continue to rise. The July 1 level is forecast to be 4101.20 feet with a surface of 114,600 acres. This is a 0.60 foot rise from last November 1. The normal surface of this lake on July 1 is 40,000 acres.

These forecasts assume normal weather conditions will occur throughout the forecast period. The forecasts in this bulletin are a result of coordinated activity between the Soil Conservation Service and the National Weather Service in an effort to provide the best possible service to water users.

This report contains data furnished by the Oregon Department of Water Resources, U.S. Geological Survey, NOAA, National Weather Service and other cooperators.

Owyhee and Malheur Basins

Mountain snowpack* (inches)

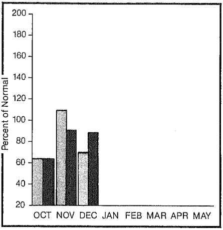


*Based on selected stations

Maximum ▨ Average – – – –

Minimum ▨ Current ●——●

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation ▨ Year to date precipitation ■

WATER SUPPLY OUTLOOK:

Summer streamflow is forecast to be near normal. mountain snowpack is much above average and is th highest in the state. Precipitation during Decem was 70% of normal. For the October-December wint period it has been 84% of normal (again this is t highest percentage in Oregon). Reservoir storage good with Beulah and Owyhee above average for thi time of year.

For more information contact your local Soil Conservation Service office.

OWYHEE AND MALHEUR BASINS

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
BULLY CREEK at Warmsprings	MAR-MAY	14.4	13.2	91.0	173.6	27.8				
MALHEUR near Drewsey	FEB-JUL	106.3	90.4	85.0	140.2	30.1				
	APR-SEP	69.6	59.1	84.0	142.2	41.7				
MALHEUR, NORTH FORK at Beulah * .	FEB-JUL	78.9	78.2	99.0	154.6	44.4				
	APR-SEP	62.8	63.6	101.0	156.1	46.2				
OWYHEE RESERVOIR net Inflow	FEB-JUL	561.1	617.2	109.0	162.0	57.9				
	APR-SEP	376.1	414.0	110.0	178.1	42.0				
OWYHEE nr Rome *	FEB-JUL	597.9	658.0	110.0	162.1	58.0				
SUCCOR CREEK nr Jordan Valley	FEB-JUL	16.2	16.8	103.0	160.5	49.4				

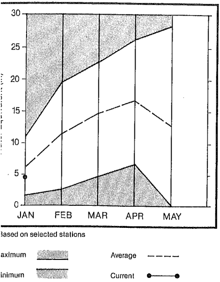
RESERVOIR STORAGE		(1000AF)		
RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVE.
BEULAH RES	60.0	28.7	34.9	17.5
BULLY CREEK	30.0	9.3	15.8	10.0
OWYHEE	715.0	422.6	583.4	394.6
WARMSPRINGS	191.0	54.1	130.6	67.5

WATERSHED SNOWPACK ANALYSIS			
WATERSHED	NO. COURSES AVE.O	THIS YEAR AS % OF LAST YR.	THIS YEAR AS % OF AVERAGE
Owyhee River	8	84	162
Malheur	5	66	115
Jordan Creek	1	77	180
Bully Creek	0	0	0

*Corrected for upstream diversions or changes in reservoir storage..
Average is for 1961-80 period.

Burnt, Powder, Grande Ronde, and Imnaha Basins

ountain snowpack* (inches)



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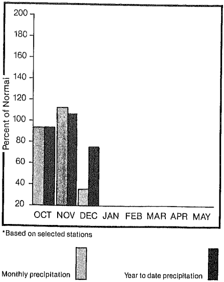
Precipitation* (percent of normal)



*Based on selected stations

BURNT, POWDER, PINE, GRANDE RONDE AND IMNAHA BASINS

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
ANTHONY CREEK blw NF nr Powder	FEB-JUL	17.3	18.2	105.0	138.7	69.4				
BEAR CREEK near Wallowa	APR-SEP	65.6	62.5	95.0	125.0	65.5				
BIG CREEK blw Burn Ck	FEB-JUL	12.5	12.2	97.0	128.0	64.0				
BURNT near Hereford x	FEB-JUL APR-SEP	48.1 34.3	48.1 34.3	99.0 100.0	145.5 154.5	54.1 43.7				
CATHERINE CK near Union	APR-SEP	63.7	62.1	97.0	127.2	67.5				
DEER CK near Sumpter	FEB-JUL	18.4	17.1	93.0	135.9	54.3				
EAGLE CK above Skull Ck	APR-JUL APR-SEP	168.9 184.2	165.3 181.0	97.0 98.0	127.9 128.1	68.1 68.4				
GRANDE RONDE at LaGrande	MAR-JUL APR-SEP	197.6 161.9	178.0 145.7	90.0 89.0	156.9 156.9	12.7 14.8				
HURRICANE CK near Joseph	APR-SEP	45.8	44.3	96.0	122.3	72.1				
IMNAHA at Imnaha	APR-SEP	300.7	285.7	95.0	130.0	69.8				
LOSTINE near Lostine	APR-SEP	122.9	110.6	89.0	114.7	73.2				
PINE CREEK near Oxbow	FEB-JUL	238.3	226.4	95.0	130.1	35.7				
POWDER near Sumpter x	APR-JUL APR-SEP	55.7 56.8	52.9 54.0	94.0 95.0	136.4 135.6	53.9 61.6				
WALLOWA LAKE near Joseph	FEB-SEP APR-SEP	12.4 11.1	12.0 10.7	96.0 96.0	129.0 126.1	64.5 63.1				
WALLOWA RIVER at Joseph x	APR-JUL	71.6	71.8	100.0	128.5	72.6				
WOLF CK RESERVOIR net Inflow	MAR-JUN	13.7	14.8	108.0	146.0	80.3				

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	xx USEABLE STORAGE xx THIS YEAR	LAST YEAR	AVE.
PHILLIPS LAKE	73.5	39.6	61.8	24.9
THIEF VALLEY	17.4	NO REPORT		14.1
UNITY	25.2	12.1	14.8	8.8
WALLOWA LAKE	37.5	15.8	17.6	20.0
WOLF CREEK	10.4	2.9	4.4	---

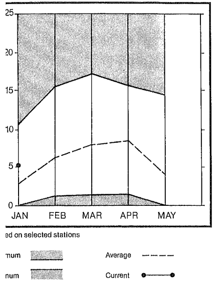
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF LAST YR.	AVERAGE
Grande Ronde ab LaGrande	5	64	105
Powder River	5	70	107
Wallowa,Imnaha,Catherine	0	0	0
Burnt River	4	53	93

xCorrected for upstream diversions or changes in reservoir storage.
Average is for 1961-80 period.

Umatilla, Walla Walla, Willow, Rock, and Lower John Day Basins

ıntain snowpack* (inches)



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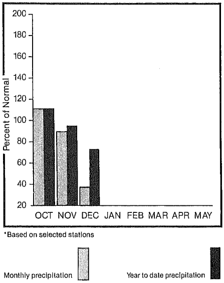
Precipitation* (percent of normal)



*Based on selected stations

TER SUPPLY TLOOK:

Summer water supplies are forecast to be near normal to below normal this year. Streamflows should range from 82% to 102% of normal. Unusually cold temperatures during November and early December helped the mountain snowpack accumulate to 127% of average. This occurred even though the precipitation has been very low. December total was only 38% of average and for the October-December period it has been 72%. Reservoir storage is below average.

For more information contact your local Soil Conservation Service office.

UMATILLA, WALLA WALLA, WILLOW, ROCK AND LOWER JOHN DAY BASINS

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
BUTTER CK NEAR PINE CITY	MAR-JUL	11.6	10.7	92.0	146.6	34.5				
COUSE CK nr Milton Freewater	FEB-JUL	6.8	5.8	85.0	132.4	29.4				
MCKAY near Pilot Rock	APR-SEP	23.8	20.6	86.0	151.3	21.0				
PINE CREEK near Weston	FEB-SEP	5.6	4.6	82.0	125.0	35.7				
RHEA CREEK near Heppner	FEB-JUL	9.3	7.9	84.0	139.8	32.3				
ROCK CREEK above Cayuse Canyon	FEB-JUL	19.8	20.3	102.0	151.5	50.5				
UMATILLA near Gibbon	MAR-SEP APR-SEP	98.6 76.7	98.6 76.7	100.0 100.0	141.0 140.8	46.7 58.7				
UMATILLA near Pendleton	MAR-SEP APR-SEP	203.8 146.9	203.8 146.9	100.0 100.0	149.2 147.7	51.0 51.7				
SF WALLA WALLA nr MiltonFreewater	MAR-SEP APR-SEP	99.0 99.0	90.0 89.0	90.0 89.0	118.2 115.2	46.5 36.4				
WILLOW CREEK near Heppner	FEB-JUL	9.4	9.3	98.0	148.9	42.6				

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVE.
COLD SPRINGS	50.0	3.8	15.1	17.3
MCKAY	73.8	18.8	30.6	19.6

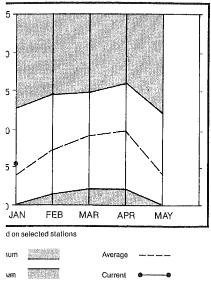
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF LAST YR.	AVERAGE
Walla Walla River	0	0	0
Umatilla River	4	62	127
McKay Creek	3	57	111

*Corrected for upstream diversions or changes in reservoir storage.
Average is for 1961-80 period.

Upper John Day Basin

ntain snowpack* (inches)



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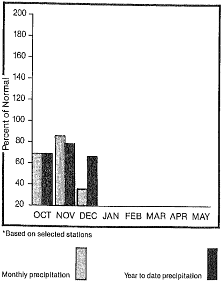
Precipitation* (percent of normal)



*Based on selected stations

UPPER JOHN DAY BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
CAMAS CREEK nr Ukiah	MAR-JUL	43.5	43.2	99.0	149.4	48.3				
	APR-SEP	34.2	34.2	100.0	149.1	58.5				
MF JOHN DAY at Ritter	MAR-JUL	133.0	133.0	100.0	144.4	55.6				
	APR-SEP	112.0	112.0	100.0	143.7	56.2				
NF JOHN DAY at Monument	MAR-JUL	658.3	599.8	91.0	135.0	47.1				
	APR-SEP	549.4	506.3	92.0	136.1	48.2				
MOUNTAIN CREEK near Mitchell	FEB-JUL	5.1	4.5	87.0	137.3	39.2				
STRAWBERRY CREEK nr Prairie City	MAR-JUL	7.3	6.3	86.0	123.3	54.8				
	APR-SEP	7.8	6.6	84.0	115.4	51.3				

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVE.

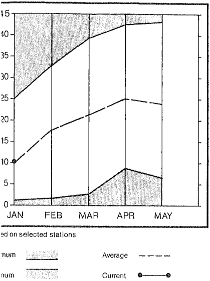
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF LAST YR.	AVERAGE
John Day, North Fork	7	64	110
John Day above Dayville	7	55	103

*Corrected for upstream diversions or changes in reservoir storage.
Average is for 1961-80 period.

Upper Deschutes and Crooked Basins

ntain snowpack* (inches)



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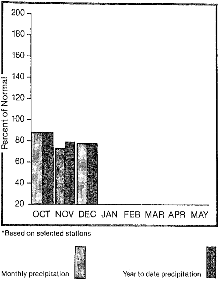
Precipitation* (percent of normal)



*Based on selected stations

TER SUPPLY TLOOK:

Water supplies in the Deschutes and Crooked River basins are forecast to be near normal this year. Streamflows should range from 91% to 110% of average. The mountain snowpack is 109% of average. December precipitation was the heaviest in the state at 78% of normal. For the October-December period, it has also been 78%. Reservoir storage is very good in the area. All are above average except Prineville which is still good at 97% of average.

For more information contact your local Soil Conservation Service office.

UPPER DESCHUTES AND CROOKED BASINS

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
BEAVER CREEK nr Paulina	FEB-JUL	40.9	42.5	103.0	154.0	53.0				
	APR-SEP	16.8	17.7	105.0	140.0	59.5				
CRANE PRAIRIE RES net Inflow *	FEB-JUL	90.8	108.7	110.0	149.0	69.0				
	APR-SEP	113.2	124.5	109.0	154.6	65.4				
CRESCENT CK nr Crescent Lake *	MAR-JUL	10.8	18.8	100.0	140.9	47.9				
	APR-SEP	19.9	19.9	100.0	155.0	45.2				
CROOKED nr Prineville *	FEB-JUL	176.6	194.0	109.0	160.7	51.0				
	APR-SEP	93.9	103.0	109.0	160.3	51.1				
NF CROOKED blw Lookout Ck	FEB-JUL	14.9	13.4	89.0	154.4	40.3				
DESCHUTES at Benham Falls *	APR-JUL	352.9	352.9	100.0	130.1	70.0				
	APR-SEP	539.9	529.0	97.0	130.0	65.9				
DESCHUTES below Snow Creek	FEB-SEP	71.3	74.5	104.0	143.1	65.9				
	APR-SEP	59.3	61.3	103.0	143.3	64.1				
LITTLE DESCHUTES nr Lapine *	FEB-JUL	95.5	87.8	92.0	131.9	52.4				
	APR-SEP	77.3	71.1	91.0	139.7	44.0				
OCHOCO RESERVOIR net Inflow	FEB-JUL	31.9	25.5	79.0	166.1	15.7				
	APR-SEP	17.7	14.1	79.0	163.8	16.9				
SQUAW CREEK nr Sisters	APR-SEP	47.7	48.4	101.0	130.0	73.4				
TUMALO CREEK near Bend *	APR-SEP	44.3	45.1	102.0	124.2	79.0				

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVE.
CRANE PRAIRE	55.3	45.2	39.0	38.5
CRESCENT LAKE	06.9	72.6	86.5	46.7
OCHOCO	47.5	18.9	27.4	16.3
PRINEVILLE	153.0	92.9	85.6	95.7
WICKIUP	200.0	166.5	172.0	130.2

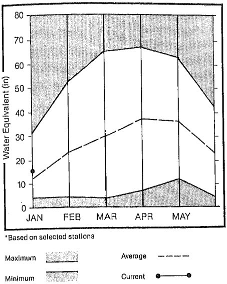
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF LAST YR.	THIS YEAR AS % OF AVERAGE
Crooked, Ochoco	2	70	131
Deschutes above Wickiup	2	42	72
Little Deschutes	2	58	115
Tumalo and Squaw Creeks	3	49	87

*Corrected for upstream diversions or changes in reservoir storage.
Average is for 1961-80 period.

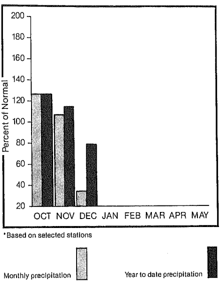
Hood, Mile Creeks, and Lower Deschutes Basins

Mountain snowpack* (inches)



*Based on selected stations

Precipitation* (percent of normal)



*Based on selected stations

WATER SUPPLY OUTLOOK:

The Mt. Hood area should experience near normal water supplies this year. Streamflow forecasts range from 100 to 104% of average. The mountain snowpack is 111% of the January 1 average. Precipitation has been very low. December only had 34% of normal while for the water year to date it has been 79%. Clear Lake reservoir content currently is 166% of the January 1 average.

For more information contact your local Soil Conservation Service office.

HOOD, MILE CREEKS AND LOWER DESCHUTES BASINS

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
HOOD RIVER near Tucker Bridge *	APR-JUL	238.2	248.0	104.0	138.1	70.1				
	APR-SEP	285.3	296.7	103.0	138.1	70.1				
WEST FORK HOOD RIVER nr Dee	APR-JUL	124.9	131.0	104.0	140.1	69.7				
	APR-SEP	146.4	153.7	104.0	140.7	69.0				
WHITE RIVER below Tygh Valley	APR-JUL	112.5	112.5	100.0	137.8	62.2				
	APR-SEP	127.5	127.5	100.0	135.7	64.3				

RESERVOIR STORAGE (1000AF)

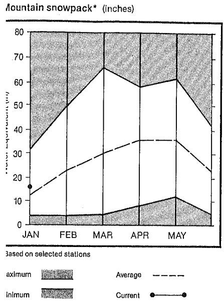
RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE **		
		THIS YEAR	LAST YEAR	AVE.
CLEAR LAKE (WASCO)	11.9	5.3	1.1	3.2

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF	
		LAST YR.	AVERAGE
Hood River	3	41	112
Mile Creeks	0	0	0
White River	2	40	99

*Corrected for upstream diversions or changes in reservoir storage.
Average is for 1961-80 period.

Lower Columbia Basin



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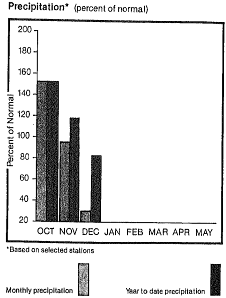


*Based on selected stations

ATER SUPPLY UTLOOK:

The Columbia River at The Dalles is forecast to flow at 90% of normal this spring and summer, while the Sandy River will be higher at 98%. The snowpack in the Columbia basin above The Dalles is 80% of normal. The Columbia basin precipitation during December was only 30% of average while it has been 81% for the water year to date.

For more information contact your local Soil Conservation Service office.

LOWER COLUMBIA BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
COLUMBIA at The Dalles *	APR-JUL	86500.0	78300.0	90.0	116.5	64.5				
	APR-SEP	101000.0	91500.0	90.0	116.6	64.6				
SANDY RIVER near Marmot	APR-JUL	327.1	320.0	97.0	134.8	60.8				
	APR-SEP	380.8	373.2	98.0	135.0	60.9				

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVE.

WATERSHED SNOWPACK ANALYSIS

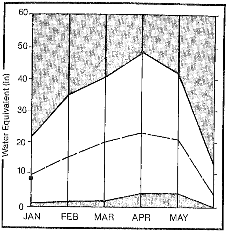
WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF LAST YR.	THIS YEAR AS % OF AVERAGE
Sandy River	2	40	99

*Corrected for upstream diversions or changes in reservoir storage.
Average is for 1961-80 period.

See Page 30 for more information.

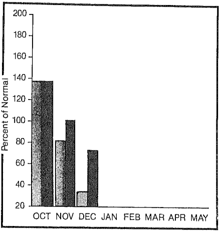
Willamette Basin

Mountain snowpack* (inches)



*Based on selected stations

Precipitation* (percent of normal)



*Based on selected stations

WATER SUPPLY OUTLOOK:

Water supplies in the Willamette basin should be near normal this year. The forecast ranges from 89% to 110% of average. December precipitation has been the lowest in the state at 34% of average. For the October-December period it has been 73%. The irrigation reservoirs in the area currently contain above average amounts of stored water.

For more information contact your local Soil Conservation Service office.

WILLAMETTE BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
CLACKAMAS at Estacada *	APR-JUL	652.0	652.0	100.0	130.0	69.9				
	APR-SEP	764.0	760.0	100.0	130.0	70.0				
CLACKAMAS above Three Lynx *	APR-JUL	494.9	493.0	99.0	129.5	69.7				
	APR-SEP	587.3	586.0	99.0	129.7	69.8				
MCKENZIE at McKenzie Bridge *	APR-JUL	440.4	396.0	89.0	114.9	64.9				
	APR-SEP	584.9	526.0	89.0	114.9	65.0				
MCKENZIE near Vida *	APR-JUL	994.3	895.0	90.0	116.1	64.0				
	APR-SEP	1222.9	1100.6	89.0	116.0	64.0				
SF MCKENZIE nr Rainbow *	APR-JUL	201.9	183.7	90.0	118.9	62.9				
	APR-SEP	220.9	208.0	90.0	117.1	64.7				
MOHAWK near Springfield	FEB-JUL	165.6	174.0	105.0	140.1	70.0				
OAK GROVE FORK ab Power Intake *	APR-JUL	131.4	122.3	93.0	124.8	60.9				
	APR-SEP	167.3	156.7	93.0	125.5	61.6				
ROW near Dorena	APR-JUL	98.6	90.7	91.0	137.9	45.6				
	APR-SEP	104.4	95.0	91.0	137.9	46.0				
NORTH SANTIAM at Mehama *	APR-JUL	731.2	804.0	109.0	139.9	80.0				
	APR-SEP	838.1	922.0	110.0	140.0	80.1				
SOUTH SANTIAM at Waterloo *	APR-JUL	534.4	572.0	107.0	147.1	67.0				
	APR-SEP	577.7	610.0	106.0	147.0	67.0				
SCOGGINS CREEK near Gaston	FEB-JUL	44.8	38.0	85.0	125.0	44.6				
THOMAS CREEK nr Scio	FEB-JUL	158.8	165.4	104.0	144.2	64.2				
COAST FORK WILLAMETTE at London	APR-JUL	27.8	29.0	104.0	140.3	71.9				
MF WILLAMETTE blw NF nr Oakridge *	APR-JUL	667.9	701.0	104.0	140.0	69.9				
	APR-SEP	763.0	802.0	105.0	139.0	71.0				
NF OF MF WILLAMETTE nr Oakridge	APR-JUL	102.3	102.0	99.0	133.0	65.8				
	APR-SEP	203.9	202.0	99.0	133.4	65.7				
WILLAMETTE at Salem *	APR-JUL	4171.1	4320.0	104.0	144.0	64.0				
	APR-SEP	4655.0	4885.0	105.0	144.0	64.0				

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVE.
BLUE RIVER	85.6	0.3	0.0	0.9
COTTAGE GROVE	30.0	0.0	0.0	0.9
COUGAR	155.2	0.2	1.9	9.8
DETROIT	299.9	3.3	0.9	27.8
DORENA	70.5	0.0	0.0	3.3
FALL CREEK	115.0	0.0	0.0	0.1
FERN RIDGE	94.2	0.1	0.0	6.4
FOSTER	30.0	0.0	0.7	11.2
GREEN PETER	270.0	2.3	1.6	24.8
HILLS CREEK	200.0	0.7	2.7	14.8
LOOKOUT POINT	337.2	2.8	2.2	27.4
TIMOTHY LAKE	61.7	40.9	52.4	49.5
HENRY HAGG LAKE	53.0	24.2	28.2	27.1

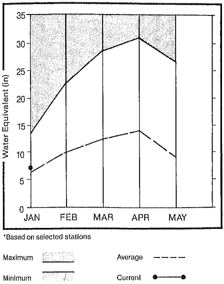
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF LAST YR.	THIS YEAR AS % OF AVERAGE
Clackamas River	2	49	127
McKenzie River	2	40	70
Row River	0	0	0
Santiam River	0	72	156
Willamette Middle Fork	3	49	107

*Corrected for upstream diversions or changes in reservoir storage.
Average is for 1961-80 period.

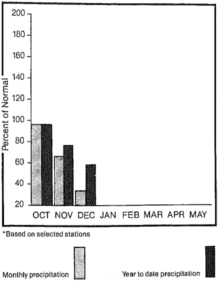
Rogue and Umpqua Basins

Mountain snowpack* (inches)



*Based on selected stations

Precipitation* (percent of normal)



*Based on selected stations

WATER SUPPLY OUTLOOK:

Streamflow forecasts range from 81% to 110% with most being very close to normal. The snowpack is the lowest in the state but is still 97% of average. December precipitation has also been one of the lowest at 34% of normal. For the water year to date, the precipitation has been 73%. Reservoir storage is normal for this time of year.

For more information contact your local Soil Conservation Service office.

ROGUE AND UMPQUA BASINS

STREAMFLOW FORECASTS

T POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
nr Copper *	APR-SEP	123.4	113.5	91.0	137.0	47.0				
TTE CK near Butte Falls	APR-JUL	34.4	34.3	99.0	139.5	61.0				
R above Trap Creek *	APR-SEP	68.5	64.9	94.0	119.7	70.1				
near Azalea	FEB-JUL	42.7	35.0	81.0	107.7	56.2				
LAKE net Inflow *	APR-JUL	3.9	3.9	100.0	153.8	51.3				
EK at Pease Bridge	FEB-JUL	21.0	20.0	95.0	138.1	52.4				
IRIE RES net Inflow *	APR-JUL	4.7	4.2	90.0	148.9	42.6				
near Kerby	APR-JUL APR-SEP	179.6 186.7	197.5 205.0	110.0 109.0	159.8 167.6	60.1 52.0				
BUTTE CK nr Lakecreek *	APR-SEP	13.2	12.3	93.0	136.4	53.0				
BUTTE CK nr Lakecreek *	APR-SEP	32.1	29.8	92.0	134.0	53.0				
T CK nr Prospect	APR-JUL	33.9	34.0	100.0	129.8	70.8				
R ab Prospect	APR-JUL APR-SEP	244.9 299.5	230.0 281.5	93.0 94.0	129.8 123.9	58.0 64.1				
near Prospect *	APR-JUL APR-SEP	58.9 69.9	55.3 65.7	94.0 94.0	123.9 124.5	64.5 64.4				
R at Raygold *	APR-JUL APR-SEP	721.9 879.9	721.9 879.9	100.0 100.0	135.1 135.0	65.0 65.0				
R at Grants Pass *	APR-JUL APR-SEP	732.9 875.8	667.0 797.0	91.0 91.0	126.1 126.1	55.9 55.9				
EK blw Little Grayback	APR-JUL	55.6	55.2	99.0	143.9	54.0				
UA nr Tokatee Falls *	APR-SEP	163.9	163.0	99.0	124.5	74.4				
UA at Winchester *	APR-JUL	751.1	793.9	105.0	130.7	80.7				
UA at Brockway	APR-JUL	376.6	369.0	97.0	122.9	73.0				
UA near Tiller	APR-JUL	180.3	177.1	98.0	123.1	73.2				

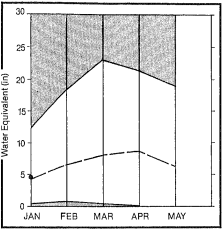
RESERVOIR STORAGE (1000AF)				
RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVE.
	75.2	5.8	16.3	---
AKE	39.0	16.8	17.7	18.3
	8.0	4.7	5.5	5.3
AKE	16.1	9.3	13.3	7.7
RIE	60.0	42.0	52.6	38.0
IE	16.1	10.2	12.8	10.0
	315.0	142.3	203.3	---

WATERSHED SNOWPACK ANALYSIS			
WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF LAST YR.	THIS YEAR AS % OF AVERAGE
Applegate River	2	39	95
Bear Creek	2	43	100
Butte Creek	6	55	114
Illinois River	1	41	107
North Umpqua River	9	62	121
Rogue River	21	46	94
Mt. Ashland	1	38	96

d for upstream diversions or changes in reservoir storage.
is for 1961-80 period.

Klamath Basin

Mountain snowpack* (inches)



*Based on selected stations

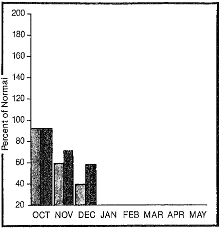
Maximum ▨

Minimum ▨

Average ----

Current ●—●

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation ▨

Year to date precipitation ■

WATER SUPPLY OUTLOOK:

Water supplies are forecast to be near normal this spring and summer. Streamflows should range from 86% to 100% of average. Precipitation has been very low at 40% of normal for December and 58% for the October-December period. The mountain snowpack is currently 113% of normal. Gerber and Clear Lake storage is above average while Upper Klamath Lake is 91% of average.

For more information contact your local Soil Conservation Service office.

KLAMATH BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
CLEAR LAKE net Inflow	FEB-JUL	08.0	83.5	94.0	144.3	44.3				
GERBER RESERVOIR net Inflow	FEB-JUL	38.4	38.4	100.0	151.0	49.5				
SPRAGUE near Chiloquin	FEB-SEP	324.4	260.0	80.0	122.1	38.2				
	APR-SEP	227.7	182.0	79.0	131.8	28.1				
UPPER KLAMATH LAKE net Inflow	FEB-SEP	840.6	815.0	96.0	131.9	62.0				
	APR-SEP	502.3	487.0	96.0	143.9	50.0				
WILLIAMSON near Chiloquin	FEB-SEP	565.7	492.0	86.0	122.0	52.0				
	APR-SEP	386.8	340.0	87.0	129.8	46.0				

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVE.
CLEAR LAKE (CALIF)	513.3	297.7	361.7	179.8
GERBER	94.3	53.1	69.2	37.8
UPPER KLAMATH LAKE	523.7	309.4	289.0	338.9

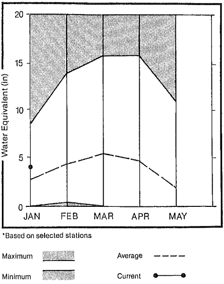
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF LAST YR.	AVERAGE
Lost River	2	48	72
Sprague River	2	105	153
Upper Klamath Lake	12	57	111
Williamson River	5	51	96

*Corrected for upstream diversions or changes in reservoir storage.
Average is for 1961-80 period.

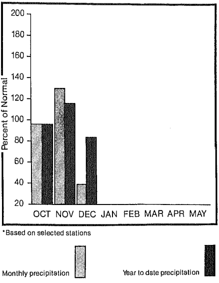
Lake County and Goose Lake Basins

Mountain snowpack* (inches)



*Based on selected stations

Precipitation* (percent of normal)



*Based on selected stations

WATER SUPPLY OUTLOOK:

Lake County's water supplies should be good this year with near normal amounts being available. The streamflow forecasts range from 90% to 107% of average. The snowpack is 113% of average. Precipitation during the month of December has been 39% of normal while for the water year to date it has been 82%. Stored water supplies are near normal.

For more information contact your local Soil Conservation Service office.

LAKE COUNTY AND GOOSE LAKE BASINS

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
BRIDGE CREEK at Spahr Ranch	APR-JUL	3.4	3.6	107.0	147.1	58.8				
CHEWAUCAN near Paisley	MAR-JUL	82.4	74.1	90.0	135.9	43.7				
COTTONWOOD CK near Lakeview *	MAR-JUL	10.9	10.6	97.0	165.1	36.7				
DEEP CREEK ab Adel	MAR-JUL	76.2	76.2	100.0	154.9	44.6				
DREWS RESERVOIR net Inflow *	MAR-JUL	39.5	40.6	103.0	167.1	38.0				
HONEY CREEK near Plush	MAR-JUL	18.9	19.8	105.0	164.0	47.6				
SILVER CREEK near Silver Lake *	APR-JUL	14.1	13.3	94.0	148.9	42.6				
TWENTYMILE near Adel	MAR-JUL	26.0	27.3	105.0	188.5	19.2				

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVE.
COTTONWOOD	8.7	3.9	1.5	2.1
DREWS	63.0	25.7	44.9	28.6
THOMPSON VALLEY	18.4	NO REPORT		9.6

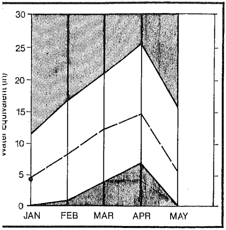
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF LAST YR.	AVERAGE
Chewaucan River	1	120	150
Deep Creek	2	63	132
Drew Creek	1	120	150
Honey Creek	2	63	132
Silver Creek (Lake Co.)	2	113	194
Twentymile Creek	2	63	132

*Corrected for upstream diversions or changes in reservoir storage.
Average is for 1961-80 period.

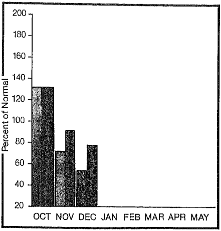
Harney Basin

Mountain snowpack* (inches)



Based on selected stations

Precipitation* (percent of normal)



*Based on selected stations

WATER SUPPLY OUTLOOK:

Streamflows are forecast to be near normal this year in the Harney basin. The forecasts range from 91% to 110% of normal. December precipitation was half the normal amount while for the October-December period it has been 78% of normal. The snowpack is very good at 136% of normal. The very cold temperatures during November and early December helped the snowpack be this heavy.

For more information contact your local Soil Conservation Service office.

HARNEY BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
DONNER UND BLITZEN nr Frenchglen	MAR-JUL	61.8	68.0	110.0	160.2	59.9				
	APR-SEP	58.9	64.7	110.0	159.6	59.4				
SILVER CREEK near Riley	APR-JUL	15.5	17.0	109.0	193.5	25.8				
SILVIES near Burns	MAR-JUL	96.6	96.6	100.0	160.5	40.4				
	APR-SEP	76.9	76.9	100.0	159.9	40.3				
TROUT CREEK nr Denio	MAR-JUL	9.3	8.6	91.0	150.5	32.3				
	APR-SEP	8.8	8.2	93.0	159.1	34.1				

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVE.

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF LAST YR.	AVERAGE
Donner und Blitzen River	3	99	162
Silver Creek (Harney Co)	2	60	98
Silvies River	6	62	105
Trout Creek	1	123	137

*Corrected for upstream diversions or changes in reservoir storage.
Average is for 1961-80 period.

Forecast Date of Low Flow Values

FORECAST POINT	Low Flow Value Second/Ft.	Forecast Date Stream Will Recede to Low Flow Value	Average Date of Low Flow Value
Area 1			
Owyhee near Rome	2000 1000 500	May 16 May 30 June 13	May 14 May 28 June 11
Area 2			
Eagle Cr.abv.Skull Cr.	225 160	July 26 Aug 2	July 25 Aug. 5
Catherine Cr.nr.Union	49 100 50	Aug. 1 July 7 July 26	Avg.value 49 July 9 July 28
Powder near Sumpter	100 20	June 23 July 19	June 25 July 22
Deer Cr. abv. Phillips Res. nr. Sumpter	40 10	June 17 July 4	June 17 July 6
Area 3			
Umatilla at Pendleton	550	May 17	May 17
So. Fk. Walla Walla near Milton	200 103	June 5 Aug.-Sept Min.flow	June 9 Avg.value 105
Area 4			
John Day at Service Cr.	195	Aug. 1	Avg.value 212
Area 5			
Crane Prairie net Inflow	434 261 Peak	Peak Oct. 31 May 22	
Crooked R. near Post	100	May 26	June 1
Deschutes below Bend	1500	not forecast	July 1
Little Deschutes nr. La Pine	400 200	June 3 July 4	June 7 July 8
Squaw Cr. nr. Sisters	100	Aug 10	Aug. 16
Tumalo Cr. nr. Bend	235 207 150 71	June 24 June 26 July 6 Aug 8	June 23 June 25 July 5 Aug. 7

FORECAST POINT	Low Flow Value Second/Ft.	Forecast Date Stream Will Recede to Low Flow Value	Average Date of Low Flow Value
Area 6			
Clear Branch Inflow	* 40	July 15-31	**39
*Average cfs forecast to flow for this two-week period.			
**Average cfs for period of record.			
White blw. Tygh Valley	200 145	July 3 Aug. 1	July 3 Avg.value 145
Area 9			
Cow Creek nr. Azalea	20 10	July 2 Aug 17	July 4 Aug. 19
Little Butte Creek, South Fork	100	May 13	May 15
South Umpqua nr.Brockway	90	July 29	July 30
South Umpqua at Tiller	140 90 60	July 9 July 29 Aug 25	July 10 July 30 Aug. 27
Area 11			
Deep Cr. above Adel	100	June 21	June 21
Honey Cr. nr. Plush	100 50	May 16 May 31	May 15 May 30
Twentymile near Adel	50 10	June 3 July 4	June 2 July 3
Area 12			
Silvies nr. Burns	400 200 100 50	May 5 May 21 June 9 June 22	May 5 May 21 June 9 June 23
Donner und Blitzen	200 100	June 17 July 7	June 15 July 5
	GAGE HEIGHT	SURFACE ACRES	AVERAGE SURFACE ACRES
Malheur Lake at Break in Cole Island Dike near Voltage July 1 Aug. 1	 4101.2 4100.8	 114,600 111,400	 40,000 33,000

HISTORICAL DATA (Columbia River at The Dallea)

Year	STREAMFLOW (1,000 AF)			REGULATED PEAK (1,000cfs)	DATE
	APR-SEP	APR-JUN	MAY-JUN		
1961	101,940	76,860	66,185	699	JUN 8
1962	95,260	66,516	50,819	460	JUN 5
1963	87,860	58,499	47,812	437	JUN 18
1964	110,422	73,512	63,670	662	JUN 18
1965	114,222	80,098	62,467	520	JUN 9
1966	87,386	58,250	45,962	396	JUN 12
1967	109,319	74,378	66,452	622	JUN 10
1968	89,102	55,593	47,994	404	JUN 13
1969	112,377	85,742	63,899	515	MAY 15
1970	88,243	62,993	55,227	425	MAY 28
1971	126,898	91,781	76,453	557	MAY 13
1972	135,500	97,041	81,451	619	JUN 20
1973	65,549	43,765	36,565	221	DEC 5
1974	139,501	99,035	78,946	588	JUN 20
1975	108,906	73,018	62,861	422	MAY 17
1976	122,771	79,084	62,554	418	MAY 14
1977	54,108	35,505	28,394	213	JAN 25
1978	100,968	67,287	52,035	313	JUN 10
1979	76,700	54,900	44,984	311	MAY 25
1980	91,631	68,229	53,704	345	JUN 18
1961-80 AVG	100,933	70,104	57,422	457	

LOWER COLUMBIA RIVER FLOOD STAGES (With 9.5' Tide at Astoria)

VANCOUVER GAGE (NWS)	FLOW AT THE DALLES (1,000 cfs)	SANDY	SAUVIE ISL.	SCAPPOOSE	DEER ISL.	RAINIER	BEAVER	WOODSON
		RIVER MILES						
		118.9	96.0	91.0	77.0	62.0	52.0	47.0
35 (1894)	1210	41.2	34.2	33.3	28.5	21.9	17.5	15.5
34	1160	40.5	33.5	32.5	27.7	21.2	17.0	15.0
33	1100	39.6	32.4	31.4	26.7	20.2	16.1	14.3
32 (1972)	1050	38.9	31.5	30.5	25.7	19.5	15.4	13.7
31 (1948)	1000	38.0	30.7	29.5	25.1	18.8	14.7	13.0
30	943	36.6	29.5	28.5	24.3	18.1	14.0	12.4
29	897	35.5	28.5	27.7	23.7	17.5	13.4	11.8
28	853	34.3	27.5	26.7	22.8	17.0	13.0	11.4
27 (1956)	811	33.0	26.5	25.6	21.8	16.2	12.5	11.0
26 (1950)	771	32.1	25.5	24.6	20.9	15.5	12.2	10.7
25	733	30.7	24.2	23.2	19.7	14.6	11.7	10.3
24	697	29.7	23.0	22.2	19.0	14.1	11.4	10.2
23	662	29.0	22.3	21.4	18.4	13.6	11.2	10.0
22	628	28.1	21.4	20.3	17.2	13.0	10.9	9.7
21	595	27.2	20.7	19.5	16.4	12.6	10.6	9.6
20 (1954)	564	26.2	19.8	18.6	15.5	12.1	10.2	9.4
19	534	25.5	19.2	18.0	15.0	11.8	10.0	9.3
18	501	24.4	18.3	17.2	14.3	11.4	9.8	9.1
17	479	23.4	17.4	16.4	13.7	11.0	9.6	8.9
16	452	22.4	16.5	15.5	13.0	10.5	9.3	8.7